HADDOCK INVESTIGATIONS

The haddock has been the mainstay of New England's groundfish industry for many years. It is the most valuable food fish taken in offshore American waters. As such, changes in its abundance profoundly affect the well-being of the entire New England fishing industry.

While continued research is necessary to evaluate the effects of the present mesh regulation, and to formulate and to improve upon management regulations, the time has come to focus research attention upon the biology of this species. In the recent past, the emphasis has been on the effects of fishing as it shed light on the mesh regulation. The limitations of personnel and financing have prevented any significant research in the fields of ecology and biology to the extent that any further advances in management methods must await more sophisticated biological knowledge of the species.

The regulations presently in operation are concerned solely with conserving to man's best advantage whatever may be available from year to year, and do not answer the basic questions concerned with the reason for both long and short term changes in the abundance of this species. Pending much improved knowledge of the causes of these marked variations in abundance that have occurred, we shall be in no position either to predict, explain or control such changes. It is to this end that the haddock investigation presently shifts its research emphasis.

August 6, 1959

SUMMARY C[illegible]TROL SCHEDULE

Investigation: Haddock
Biological Laboratory: Woods Hole, Mass.

Project Title	Est.* Cost	Fiscal Years 57	58	59	60	61	62	63	64	65	66
1. Validation of tagging techniques	25.7	6.3	6.4	6.4	6.6	---	---	---	---	---	---
2. Comparative age and growth studies of haddock	33.8	6.6	6.7	6.7	6.8	7.0	---	---	---	---	---
3. Analysis of haddock tagging results	82.3	12.8	13.0	12.2	13.0	15.5	15.8	---	---	---	---
4. Definition of haddock stocks	23.6	---	---	---	5.0	6.0	7.0	5.6	---	---	---
5. Seasonal distribution and abundance of haddock	40.3	6.3	6.3	6.4	6.5	6.8	8.0	---	---	---	---
6. Highlands Ground haddock study	16.0	---	3.4	4.1	4.0	4.5	---	---	---	---	---
7. Seasonal variation of haddock liver and gonad weights	19.2	---	6.3	6.4	6.5	---	---	---	---	---	---
8. Prediction of trends	95.7	8.6	8.6	7.4	7.5	7.6	9.0	7.0	11.0	14.5	14.5
9. Collection of biological samples	120.7	9.9	9.9	8.4	9.0	10.0	12.0	11.0	14.0	18.0	18.5
10. Fecundity of Haddock	36.0	---	---	---	---	12.0	12.5	11.5	---	---	---
11. Validation of stock analysis (serology)	36.9	---	---	---	---	---	10.0	11.5	15.4	---	---
12. Factors effecting successful recruitment (physical)	61.8	---	---	---	---	---	10.0	9.5	11.4	15.4	15.5
13. Factors effecting successful recruitment (biological)	58.1	---	---	---	---	---	8.3	7.5	11.4	15.4	15.5
14. Routine Age Reading	23.2	6.3	6.4	5.4	5.1	---	---	---	---	---	---
15. Prerecruit Survey (Annual)	16.6	---	---	6.0	4.6	6.0	---	---	---	---	
16. Biostatistics	35.2	9.8	7.0	4.2	6.2	8.0	---	---	---	---	
Investigation Total	725.1	66.6	74.0	73.6	80.8	83.4	92.6	63.6	63.2	63.3	64.0

Annual Review

Laboratory	Regional or Area Office	Washington Office

Date

Prepared by: J. Clark 8/6/59

Recommended by: Date

Lab. Director Herbert W. Graham 8/6/59

Reg. or Area Dir. Joseph A. Munroe 8/19/59

Branch Chief [illegible] 12-24-59

Approved by:

Division Chief for Director

*Total needed by Laboratory for Project in thousands of dollars.

#714 7/9/59

U. S. Fish and Wildlife Service
Bureau of Commercial Fisheries

Sheet No. 1

Location: Woods Hole, Mass.
Date: August 6, 1959
File No.

Research Project Outline

Title of Project: Validation of haddock aging techniques

Investigation Title: Haddock

Investigation Chief: John R. Clark

Project Leader: A. C. Jensen (Name) Fishery Research Biologist (Title) GS-9 (Grade)

Assistants: (Title and Grade)

Collaborators:

Need for Information: The entire haddock management program is based on our estimates of growth rates and the changes in the age composition of the haddock population. A validated method of aging is needed.

Objective: To be able to specify, quantitatively if possible, the precision of the haddock aging methods.

Method of Procedure:

Phase 1: Comparison of scale readings with length frequency model groups, etc.

Phase 2:

HADDOCK - 1

Sheet No. 2 File No.:

Method of Procedure: (Cont'd)

Phase 3:

Estimated Costs: Total Needed by Laboratory for Complete Project 25.7

	FY 59	FY 60	FY 61
Personal Services	1.8	1.0	--
Other Expenses:			
Within Project	0.2	0.2	--
Lab. Adm. & Ser.	4.4	5.4	--
Lab. Total	6.4	6.6	--
Regional Office	.064	.066	
Washington Office			
Total			

Recommended Source of Funds S-K and Regular
(S-K, Regular, Contributed, etc.)

Estimated Date of Completion: Phase 1 FY ; Phase 2 FY ; Phase 3 FY ; Project FY 1960

Recommended by:

		Date
Originator	John R. Clark	8/6/59
Investigation Chief	John R. Clark	8/6/59
Laboratory Director	Herbert W. Graham	8/6/59
Regional Director	Joseph L. Pennington	8/19/59
Branch Chief	[illegible]	12-24-59.

Approved by:

Division Chief for Director [illegible]

Remarks

(Continue on reverse side)

#715 7/9/59

U. S. Fish and Wildlife Service
Bureau of Commercial Fisheries

Sheet No. 1

Location: Woods Hole, Mass.
Date: August 6, 1959
File No.

Research Project Outline

Title of Project: Comparative age and growth studies of haddock

Investigation Title: Haddock

Investigation Chief: J. R. Clark

Project Leader: A. C. Jensen (Name) Fishery Research Biologist (Title) GS-9 (Grade)

Assistants: (Title and Grade)

J. P. McDermott - Fishery Research Biologist GS-5

Collaborators:

Need for Information: Age and growth information, its variation from area to area and seasonally, is required for intelligent management evaluation.

Objective: To specify the normal age-growth relations of various haddock stocks.

Method of Procedure:

Phase 1: Analysis of scale reading data.

Phase 2:

Sheet No. 2 File No.:

Method of Procedure: (Cont'd)

Phase 3:

Estimated Costs: Total Needed by Laboratory for Complete Project 33.8

	FY 1959	FY 1960	FY 1961
Personal Services	1.0	1.4	2.0
Other Expenses: Within Project	.5	.5	1.5
Lab. Adm. & Ser.	5.2	4.9	3.5
Lab. Total	6.7	6.8	7.0
Regional Office	.067	.068	.07
Washington Office			
Total			

Recommended Source of Funds S-K and Regular
(S-K, Regular, Contributed, etc.)

Estimated Date of Completion: Phase 1 FY ; Phase 2 FY ; Phase 3 FY ; Project FY 1961

Recommended by:

		Date
Originator	John R. Clark	8/6/59
Investigation Chief	John R. Clark	8/6/59
Laboratory Director	Herbert W. Graham	8/6/59
Regional Director	Joseph G. Lunsford	8/20/59
Branch Chief	[illegible]	12-24-59

Approved by:

Division Chief for Director [illegible]

Remarks

(Continue on reverse side)

#715 7/9/59

U. S. Fish and Wildlife Service
Bureau of Commercial Fisheries

Sheet No. 1

Location: Woods Hole, Mass.
Date: August 6, 1959
File No.

Research Project Outline

Title of Project: ~~Analysis of haddock tagging results~~

Investigation Title: Haddock

Investigation Chief: J. R. Clark

Project Leader: J. R. Clark (Name) Fishery Research Biologist (Title) GS-12 (Grade)

Assistants: (Title and Grade)

A. C. Jensen	Fishery Research Biologist	GS-9
J. P. McDermott	Fishery Research Biologist	GS-5

Collaborators:

Need for Information: Tagging haddock enables the laboratory to make decisions about the separateness of various haddock populations and helps to understand the differential seasonal movements of various groups of haddock.

Objective: To ~~more clearly~~ define haddock "population units" and to determine seasonal movements.

Method of Procedure:

Phase 1: Tag haddock on research vessel. Analysis of return information.

Phase 2:

HADDOCK - 3

Sheet No. 2 File No.:

Method of Procedure: (Cont'd)

Phase 3:

Estimated Costs: Total Needed by Laboratory for Complete Project 82.3

	FY 1959	FY 1960	FY 1961
Personal Services	1.0	1.0	2.0
Other Expenses: Within Project	1.5	0.5	0.5
Lab. Adm. & Ser.	9.7	11.5	13.0
Lab. Total	12.2	13.0	15.5
Regional Office	.122	.133	.155
Washington Office			
Total			

Recommended Source of Funds S-K and Regular
(S-K, Regular, Contributed, etc.)

Estimated Date of Completion: Phase 1 FY ; Phase 2 FY ; Phase 3 FY ; Project FY 1962

Recommended by:

		Date
Originator	John R. Clark	8/6/59
Investigation Chief	John R. Clark	8/6/59
Laboratory Director	Herbert W. Graham	8/6/59
Regional Director	Joseph F. Rinaldo	8/20/59
Branch Chief	[illegible]	12-24-59.

Approved by:

Division Chief for Director [illegible]

Remarks

(Continue on reverse side)

#715 7/9/59

U. S. Fish and Wildlife Service
Bureau of Commercial Fisheries

Sheet No. 1

Location: Woods Hole, Mass.
Date: August 6, 1959
File No.

Research Project Outline

Title of Project: Definition of haddock stocks

Investigation Title: Haddock

Investigation Chief: J. R. Clark

Project Leader: J. R. Clark (Name) Fishery Research Biologist (Title) GS-12 (Grade)

Assistants: (Title and Grade)

A. C. Jensen Fishery Research Biologist GS-9
J. P. McDermott Fishery Research Biologist GS-5

Collaborators:

Need for Information: The definition of haddock stocks is required to further our ability to make necessary management evaluations.

Objective: To define haddock "population units" in the Gulf of Maine and contiguous waters.

Method of Procedure:

Phase 1: Analysis of tag returns, vertebral counts, catch data, etc. with specific reference to defining "population units".

Phase 2:

HADDOCK - 4

Sheet No. 2 File No.:

Method of Procedure: (Cont'd)

Phase 3:

Estimated Costs: Total Needed by Laboratory for Complete Project 23.6

	FY 1959	FY 1960	FY 1961
Personal Services	--	1.0	2.5
Other Expenses:			
Within Project	--	0.5	3.0
Lab. Adm. & Ser.	--	3.5	.5
Lab. Total	--	5.0	6.0
Regional Office		.05	.06
Washington Office			
Total			

Recommended Source of Funds S-K and Regular
(S-K, Regular, Contributed, etc.)

Estimated Date of Completion: Phase 1 FY ; Phase 2 FY ; Phase 3 FY ; Project FY 1963

Recommended by:

		Date
Originator	John R. Clark	8/6/59
Investigation Chief	John R. Clark	8/6/59
Laboratory Director	Herbert W. Graham	8/6/59
Regional Director	Joseph J. Pfeiffer	8/19/59
Branch Chief	Edward W. Fiegler	12-24-59.

Approved by:

Division Chief for Director

Remarks

(Continue on reverse side)

#715 7/9/59

U. S. Fish and Wildlife Service
Bureau of Commercial Fisheries

Sheet No. 1

Location: Woods Hole, Mass.
Date: August 6, 1959
File No.

Research Project Outline

Title of Project: Seasonal distribution and abundance of haddock

Investigation Title: Haddock

Investigation Chief: J. R. Clark

Project Leader: J. R. Clark (Name) Fishery Research Biologist (Title) GS-12 (Grade)

Assistants: (Title and Grade)

Collaborators:

Need for Information: The seasonal distribution and abundance of haddock has apparently undergone a considerable change in recent years. These changes are apparently associated with changes in environment. Data is needed to evaluate long-term environment changes with population changes.

Objective: To define the pattern of distribution and relative abundance.

Method of Procedure:

Phase 1: Analysis of catch records.

Phase 2:

HADDOCK - 5

Sheet No. 2 File No.:

Method of Procedure: (Cont'd)

Phase 3:

Estimated Costs: Total Needed by Laboratory for Complete Project 40.3

	FY 1959	FY 1960	FY 1961
Personal Services	1.0	2.0	2.0
Other Expenses: Within Project	.2	0.3	0.5
Lab. Adm. & Ser.	5.2	4.2	4.3
Lab. Total	6.4	6.5	6.8
Regional Office	.064	.065	.068
Washington Office			
Total			

Recommended Source of Funds S-K and Regular
(S-K, Regular, Contributed, etc.)

Estimated Date of Completion: Phase 1 FY ; Phase 2 FY ; Phase 3 FY ; Project FY 1962

Recommended by:

		Date
Originator	John R. Clark	8/6/59
Investigation Chief	John R. Clark	8/6/59
Laboratory Director	Herbert W. Graham	8/6/59
Regional Director	Joseph F. Penczkowski	8/19/59
Branch Chief	[illegible]	12-24-59

Approved by:

Division Chief for Director [illegible]

Remarks

(Continue on reverse side)

#715 7/9/59

U. S. Fish and Wildlife Service
Bureau of Commercial Fisheries

Sheet No. 1

Location: Woods Hole, Mass.
Date: August 6, 1959
File No.

Research Project Outline

Title of Project: A study of the Highland Ground haddock

Investigation Title: Haddock

Investigation Chief: J. R. Clark

Project Leader: J. R. Clark (Name) Fishery Research Biologist (Title) GS-12 (Grade)

Assistants: (Title and Grade)

A. C. Jensen	Fishery Research Biologist	GS-9
J. P. McDermott	Fishery Research Biologist	GS-5

Collaborators:

Need for Information: This study is being undertaken for the purpose of obtaining material on a regular basis on a fishing ground known as a particularly good year-round haddock area. The biological material is being analyzed for seasonal changes and for information that may indicate reasons for the seasonal activities of haddock.

Objective: To closely study one small area and its changing haddock population.

Method of Procedure:

Phase 1: Survey cruises with chartered vessel monthly.
Studies of various body organs and their seasonal changes.
Analysis of changes in species composition
Analysis of changes in organ (haddock) weights
Analysis of changes in haddock age and length composition

Phase 2:

Sheet No. 2 File No.:

Method of Procedure: (Cont'd)

Phase 3:

Estimated Costs: Total Needed by Laboratory for Complete Project 16.0

	FY 1959	FY 1960	FY 1961
Personal Services	2.0	2.0	2.5
Other Expenses:			
Within Project	2.0	0.2	0.2
Lab. Adm. & Ser.	0.1	1.8	1.8
Lab. Total	4.1	4.0	4.5
Regional Office	.041	.04	.045
Washington Office			
Total			

Recommended Source of Funds S-K and Regular
(S-K, Regular, Contributed, etc.)

Estimated Date of Completion: Phase 1 FY ; Phase 2 FY ; Phase 3 FY ; Project FY 61.

Recommended by:

		Date
Originator	John R. Clark	8/6/59
Investigation Chief	J. R. Clark	8/6/59
Laboratory Director	Herbert W. Graham	8/6/59
Regional Director	Joseph T. Penaluna	8/19/59
Branch Chief	[illegible]	12-24-59

Approved by:

Division Chief for Director [illegible]

Remarks

(Continue on reverse side)

#715 7/9/59

U. S. Fish and Wildlife Service
Bureau of Commercial Fisheries

Sheet No. 1

Location: Woods Hole, Mass.
Date: August 6, 1959
File No.

Research Project Outline

Title of Project: Seasonal variation of haddock liver and gonad weights

Investigation Title: Haddock

Investigation Chief: J. R. Clark

Project Leader: J. P. McDermott (Name) Fishery Research Biologist (Title) GS-5 (Grade)

Assistants: (Title and Grade)

Collaborators:

Need for Information: Such analyses as these aid in the interpretation of seasonal movements, behavior, etc.

Objective: To determine and relate seasonal changes in body organs.

Method of Procedure:

Phase 1: Weights of various organs, monthly (charter cruises)
Analysis of changes reported by port pool.

Phase 2:

Haddock - 7

Sheet No. 2 File No.:

Method of Procedure: (Cont'd)

Phase 3:

Estimated Costs: Total Needed by Laboratory for Complete Project 19.2

	FY 1959	FY 1960	FY 1961
Personal Services	2.0	3.0	--
Other Expenses: Within Project	0.2	0.5	--
Lab. Adm. & Ser.	4.2	3.0	--
Lab. Total	6.4	6.5	--
Regional Office	.064	.065	
Washington Office			
Total			

Recommended Source of Funds S-K and Regular
(S-K, Regular, Contributed, etc.)

Estimated Date of Completion: Phase 1 FY ; Phase 2 FY ; Phase 3 FY ; Project FY 60

Recommended by:

		Date
Originator	John R. Clark	8/6/59
Investigation Chief	J. R. Clark	8/6/59
Laboratory Director	Herbert W. Graham	8/6/59
Regional Director	Joseph F. Pomeroy	8/19/59
Branch Chief	[illegible]	12-24-59

Approved by:

Division Chief for Director [illegible]

Remarks

(Continue on reverse side)

#715 7/9/59

U. S. Fish and Wildlife Service
Bureau of Commercial Fisheries

Sheet No. 1

Location: Woods Hole, Mass.
Date: August 6, 1959
File No.

Research Project Outline

Title of Project: Prediction of haddock trends

Investigation Title: Haddock

Investigation Chief: J. R. Clark

Project Leader: J. R. Clark (Name) Fishery Research Biologist (Title) GS-12 (Grade)

Assistants: (Title and Grade)

A. C. Jensen	Fishery Research Biologist	GS-9
J. P. McDermott	Fishery Research Biologist	GS-5

Collaborators:

Need for Information: Information for the Fishery to enable them to intelligently plan future operations.

Objective: To predict the haddock population structure for the benefit of the Fishery

Method of Procedure:

Phase 1: Analysis of biological information and landings data for indications of shifts in population strength and structure.

Phase 2:

Sheet No. 2 File No.:

Method of Procedure: (Cont'd)

Phase 3:

Estimated Costs: Total Needed by Laboratory for Complete Project 95.7

	FY 1959	FY 1960	FY 1961
Personal Services	2.0	2.0	2.5
Other Expenses: Within Project	0.2	0.2	0.5
Lab. Adm. & Ser.	5.2	5.3	4.6
Lab. Total	7.4	7.5	7.6
Regional Office	.074	.075	.076
Washington Office			
Total			

Recommended Source of Funds S-K and Regular
(S-K, Regular, Contributed, etc.)

Estimated Date of Completion: Phase 1 FY ; Phase 2 FY ; Phase 3 FY ; Project FY

		Date
Recommended by: Originator	John R. Clark	8/6/59
Investigation Chief	John R. Clark	8/6/59
Laboratory Director	Herbert W. Graham	8/6/59
Regional Director	Joseph A. Pierce	8/19/59
Branch Chief	[illegible]	12-24-59
Approved by: Division Chief for Director	[illegible]	

Remarks

(Continue on reverse side)

#715 7/9/59

U. S. Fish and Wildlife Service
Bureau of Commercial Fisheries

Sheet No. 1

Location: Woods Hole, Mass.
Date: August 6, 1959
File No.

Research Project Outline

Title of Project: Collection of biological samples

Investigation Title: Haddock

Investigation Chief: J. R. Clark

Project Leader: A. C. Jensen (Name) Fishery Research Biologist (Title) GS-9 (Grade)

Assistants: (Title and Grade)

J. P. McDermott - Fishery Research Biologist GS-5

Collaborators:

Need for Information: Biological samples are difficult to obtain through the commercial fishery since haddock are landed gutted. Special effort must be expended by chartering trips or purchasing special material.

Objective: To obtain required samples of biological material.

Method of Procedure:

Phase 1: Arrangements with fishermen and other cooperators to collect entire fish or other special material.

Phase 2:

Sheet No. 2 File No.:

Method of Procedure: (Cont'd)

Phase 3:

Estimated Costs: Total Needed by Laboratory for Complete Project 120.7

	FY 1959	FY 1960	FY 1961
Personal Services	2.0	2.0	1.5
Other Expenses: Within Project	0.3	0.3	0.3
Lab. Adm. & Ser.	6.1	6.7	8.2
Lab. Total	8.4	9.0	10.0
Regional Office	.084	.090	.10
Washington Office			
Total			

Recommended Source of Funds S-K and Regular
(S-K, Regular, Contributed, etc.)

Estimated Date of Completion: Phase 1 FY ; Phase 2 FY ; Phase 3 FY ; Project FY

Recommended by:

		Date
Originator	John R. Clark	8/6/59
Investigation Chief	John R. Clark	8/6/59
Laboratory Director	Herbert W. Graham	8/6/59
Regional Director	Joseph A. Pineo	8/19/59
Branch Chief	[illegible]	12-24-59

Approved by:

Division Chief for Director

Remarks

(Continue on reverse side)

#715 7/9/59

U. S. Fish and Wildlife Service
Bureau of Commercial Fisheries

Sheet No. 1

Location: Woods Hole, Mass.
Date: August 6, 1959
File No.

Research Project Outline

Title of Project: Fecundity of haddock

Investigation Title: Haddock

Investigation Chief: J. R. Clark

Project Leader: A. C. Jensen (Name) Fishery Research Biologist (Title) GS-9 (Grade)

Assistants: (Title and Grade)

Collaborators:

Need for Information: The ability of the haddock to sustain its population is dependent in part on its fecundity. This project must evaluate the interrelations of spawning capacity and the environment of haddock eggs and larvae. For this evaluation, some estimate of spawning capacity is required.

Objective: To determine the fecundity of haddock as it relates to size, age, and stock.

Method of Procedure:

Phase 1: Obtain samples of haddock gonads for fecundity studies.

Phase 2: Determine number of eggs as function of age, size and area (stock).

Haddock - 10

Sheet No. 2 File No.:

Method of Procedure: (Cont'd)

Phase 3:

Estimated Costs: Total Needed by Laboratory for Complete Project 36.0

	FY 1959	FY 1960	FY 1961
Personal Services	--	--	1.0
Other Expenses: Within Project	--	--	
Lab. Adm. & Ser.	--	--	11.0
Lab. Total	--	--	12.0
Regional Office			.12
Washington Office			
Total			

Recommended Source of Funds S-K and Regular
(S-K, Regular, Contributed, etc.)

Estimated Date of Completion: Phase 1 FY ; Phase 2 FY ; Phase 3 FY ; Project FY 63.

Recommended by:

		Date
Originator	John R. Clark	8/6/59
Investigation Chief	John R. Clark	8/6/59
Laboratory Director	Herbert W. Graham	8/6/59
Regional Director	Joseph G. Peterka	8/19/59
Branch Chief	[illegible]	12-24-59

Approved by:

Division Chief for Director [illegible]

Remarks

(Continue on reverse side)

#715 7/9/59

U. S. Fish and Wildlife Service
Bureau of Commercial Fisheries

Sheet No. 1

Location: Woods Hole, Mass.
Date: August 6, 1959
File No.

Research Project Outline

Title of Project: Routine Age Reading

Investigation Title: Haddock

Investigation Chief: J. R. Clark

Project Leader: A. Jensen (Name) F. R. B. (Title) GS-9 (Grade)

Assistants: (Title and Grade)

Collaborators:

Need for Information: Haddock landings are broken down into their age compositions to determine the contribution of various age classes to the yield and to estimate mortalities.

Objective: To determine age composition of haddock landings.

Method of Procedure:
Phase 1: Obtain scale samples from the ports.
Read scales to determine age.
Perform routine back-calculations as required.

Phase 2:

Haddock-14

Sheet No. 2 File No.:

Method of Procedure: (Cont'd)

Phase 3:

Estimated Costs: Total Needed by Laboratory for Complete Project 23.2

	FY 1959	FY 1960	FY 1961
Personal Services	1.0	1.0	--
Other Expenses: Within Project	0.2	0.2	--
Lab. Adm. & Ser.	4.2	3.9	--
Lab. Total	5.4	5.1	--
Regional Office	.054	.051	
Washington Office			
Total			

Recommended Source of Funds S-K and Regular
(S-K, Regular, Contributed, etc.)

Estimated Date of Completion: Phase 1 FY ; Phase 2 FY ; Phase 3 FY ; Project FY 60

Recommended by:		Date
Originator	John R. Clark	8/6/59
Investigation Chief	John R. Clark	8/6/59
Laboratory Director	Herbert W. Graham	8/6/59
Regional Director	Joseph A. Gennaro	8/19/59
Branch Chief	[illegible]	12-24-59
Approved by:		
Division Chief for Director	[illegible]	

Remarks

(Continue on reverse side)

#715 7/9/59

U. S. Fish and Wildlife Service
Bureau of Commercial Fisheries

Sheet No. 1

Location: Woods Hole, Mass.
Date: August 6, 1959
File No.

Research Project Outline

Title of Project: Pre-recruit Survey

Investigation Title: Haddock

Investigation Chief: J. R. Clark

Project Leader: J. R. Clark, Fishery Research Biologist, GS-12
Name Title Grade

Assistants: (Title and Grade)

Collaborators:

Need for Information: Toward the end that the future of the haddock fishery may be forecast, a survey of the pre-recruit strength of haddock appears to provide the required information. This possibility needs to be investigated.

Objective: To determine the pre-recruit strength of haddock and to validate the use of such estimates as a tool in forecasting fishery conditions.

Method of Procedure:

Phase 1: Survey cruise, occupying a series of stations in the New England area.

Phase 2: Analysis of catch data for areal distribution and abundance. Comparison of data with that of past years and the success of the fishery that has followed years of pre-recruit survey.

Sheet No. 2 File No.:

Method of Procedure: (Cont'd)

Phase 3:

Estimated Costs: Total Needed by Laboratory for Complete Project 16.6

	FY 1959	FY 1960	FY 1961
Personal Services	2.0	3.0	3.0
Other Expenses:			
Within Project	3.8	1.1	2.5
Lab. Adm. & Ser.	0.2	0.5	0.5
Lab. Total	6.0	4.6	6.0
Regional Office	.06	.046	.06
Washington Office			
Total			

Recommended Source of Funds S-K and Regular
(S-K, Regular, Contributed, etc.)

Estimated Date of Completion: Phase 1 FY ; Phase 2 FY ; Phase 3 FY ; Project FY 61

Recommended by:		Date
Originator	John R. Clark	8/6/59
Investigation Chief	John R. Clark	8/6/59
Laboratory Director	Herbert W. Graham	8/6/59
Regional Director	Joseph F. Puncochar	8/19/59
Branch Chief	HWE.	12-24-59
Approved by:		
Division Chief for Director	[illegible]	1-2-60

Remarks

(Continue on reverse side)

#715 7/9/59

U. S. Fish and Wildlife Service
Bureau of Commercial Fisheries

Sheet No. 1

Location: Woods Hole, Mass
Date: August 6, 1959
File No.

Research Project Outline

Title of Project: Biostatistics Report (Annual)

Investigation Title: Haddock

Investigation Chief: J. R. Clark

Project Leader: F. A. Dreyer, Statistical Clerk, GS-6
Name Title Grade

Assistants: (Title and Grade)

A. C. Jensen, Fishery Research Biologist, GS-9

Collaborators:

Need for Information: This report is a compilation of the vital statistics of the haddock fishery, prepared for the use of the industry and our international partners in ICNAF that are interested in evaluating the results of mesh regulation.

Objective: To put the biostatistics of the New England haddock population on record.

Method of Procedure:

Phase 1: Analysis and compilation of haddock landings data, age composition data, abundance data, and growth rate data.

Phase 2: Preparation of report (Annual).

Sheet No. 2 File No.:

Method of Procedure: (Cont'd)

Phase 3:

Estimated Costs: Total Needed by Laboratory for Complete Project 35.2

	FY 1959	FY 1960	FY 1961
Personal Services	3.0	3.0	3.0
Other Expenses:			
Within Project	0.5	0.5	0.5
Lab. Adm. & Ser.	0.7	2.7	4.5
Lab. Total	4.2	6.2	8.0
Regional Office	.042	.062	.08
Washington Office			
Total			

Recommended Source of Funds **S-K and Regular**
(S-K, Regular, Contributed, etc.)

Estimated Date of Completion: Phase 1 FY ; Phase 2 FY ; Phase 3 FY ; Project FY 61

Recommended by: Date

Originator **John R. Clark** 8/6/59

Investigation Chief John R. Clark 8/6/59

Laboratory Director Herbert W. Graham 8/6/59

Regional Director Joseph F. Puncochar 8/19/59

Branch Chief HWE. 12-24-59

Approved by:

Division Chief for Director [illegible] 1-2-60

Remarks

(Continue on reverse side)

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